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Full Length Research Paper

Longitudinal changes among adolescents' well-being at school and the importance of gender and overweight

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The experience of well-being at school, both in the recesses and at school lessons, is of great importance for all students. The Norwegian school laws confirm that every student has the right to experience well-being at school, which will lead to healthiness and good learning. Literature search indicates that there is a lack of longitudinal studies in relation to the development of students' well-being at recesses and school lessons during lower secondary school and high school. Furthermore, few studies have examined the relation between well-being at recesses and school lessons, and gender and overweight respectively. By examining students' self-reported well-being in the recesses and during school lessons each year from the age of fourteen to the age of nineteen by using questionnaires, analyses show that the well-being both at recesses and at school lessons is at the same level during these six years at school. Furthermore, analyses show that there are no significant differences in reported well-being at recesses and school lessons between boys and girls. The same analyses show that overweightness has no negative influence on students' well-being. The report of good and very good well-being at school and the lack of group differences in well-being among adolescents indicate that the Norwegian school seems to create a good learning environment for students in general.

Key words: Enjoyment, wellbeing, learning environment, teacher's role, mental health.

INTRODUCTION

According to McNulty and Fincham (2011), well-being is an important factor as a subjective experience, in relation to satisfaction with the past, positivity for the future and happiness in the present. Well-being also includes health, a component that is indeed emphasized by the government as a prerequisite for obtaining good learning conditions in school (Kunnskapsdepartementet, 2007; Utdannings og forskningsdepartementet, 2003). The Education Act 9a-3 point out that the Norwegian school is

in fact obligated by law to encourage a good mental health and social affiliation among their students' (Kunnskapsdepartementet, 2010).

The use of the ambiguous term "well-being" as a major term, requires some reflections. Graham et al. (2017) claim that internationally, the well-being of children and young people is a core focus of social policy, with a growing imperative to locate well-being within the sphere of education. However, the term 'well-being' remains

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ambiguous and the implementation of educational approaches to promote and improve it appears fragmented and ad hoc. In recent years, the term well-being has become more common as an explicit educational aim.

According to Soutter (2011), the term well-being is often broadly applied, and rarely explicitly defined. Well-being is described in education policy using conceptual pairings common in political discourse, including wealth, health and happiness, and the term is used by the Norwegian directorate of health to cover students' wealth, health and happiness (Helsedirektoratet, 2015). By publishing the report "well-being in school", the Norwegian Directorate of Health wants to disseminate the knowledge about which physical and psychological factors that encourage a high degree of well-being in school (Helsedirektoratet, 2015). The report says that in addition to academic qualification, both the primary school and the upper secondary school should aim to develop the students' fundamental values, their commitment and creativity, and encourage them to play an active role in the community. According to the same report, the students' should get challenging activities that create motivation. Above all this, the students' need to be met with respect and trust (Helsedirektoratet, 2015; Kunnskapsdepartementet, 2013).

A high degree of well-being at school does not only affect the learning process itself, but it can also prevent dropouts, which seems to be one of the largest problems in the upper secondary school here in Norway. We know that lack of social and academic affiliation and identity, together with the lack of motivation, may lead to lower achievement, and therefore one could say that an increase of well-being at school might prevent these dropouts (Helsedirektoratet, 2015; Markussen, 2010; Wollscheid, 2010). Social support and a feeling of affiliation is important for the student's motivation, regardless of context and age (Danielsen, 2010; Frederici and Skaalvik, 2013). This particular connection between well-being and motivation at school is the theoretical point of view in this study, and will be discussed later.

One of the most important findings in a comprehensive study among 4000 Norwegian adolescents in 1992 and 2010 was that the number of students' who reported to be confident at school increased from 73.9% in 1992, to 88.2% in 2010 (NOVA, 2010). Furthermore, the amount of students' who reported that they were dreading going to school was reduced from 28 to 14% during the same period. Another finding was that fewer students reported to be bored at school in 2010, compared with the data from 1992. Another comprehensive study among Norwegian adolescents (Samdal et al., 2016) found that the students, both girls and boys, rated their general well-being at school high (4.3 on a five-point scale) both in 2014, 2015 and 2016.

Another study among 11 to 16 years old Norwegian

students found that the percentage who reported that they liked school very well decreased by age, from approximately 50% at 6th grade, to 35% at 10th grade school. There were no significant differences between the genders according to well-being. However, these studies have not examined longitudinal changes in well-being among the same adolescents. Such longitudinal studies are important, to show how the adolescents' well-being actually changes during lower secondary school and high school.

The Norwegian studies indicate that well-being in Norwegian schools is relatively high, and research from other countries indicates that students in general experience good well-being at school (Currie et al., 2008; Danielsen, 2010). These results are in line with Haug (2012) considerations. In "The school as a socialization agent", Kvello (2012) concludes that the Norwegian school has succeeded in creating well-being at school. The students thrive well, and the relation to the teachers is apparently good as well. The students' relationship with their teacher is also a central component in Danielsen (2010) study about mental health in school, where 3000 students in secondary school were interviewed. The study shows that having a good relationship with the teacher has a major importance. This affects both motivation and well-being.

From a theoretical point of view, many factors may predict students' well-being at school. However, a conducted data collection among Norwegian adolescents includes longitudinal data about students well-being, and gender and overweight. When it comes to health and well-being in school, overweight might affect well-being in school. The Institute of Health (Folkehelseinstituttet, 2016) claims that overweight has a great influence on health and life quality during childhood, and research studies all over the world show that one out of four adolescents is overweight (Lagestad et al., 2017).

Latty et al. (2007) found significant associations between overweight and depression, and it can be argued that adolescents who are not overweight may thrive better at school than students who are overweight. Some studies indicate that girls seem to like high school better, with less drop out and generally better performance (Hernes, 2010; Markussen et al., 2008; Støren et al., 2007; Træland, 2012). Because of these findings, girls may experience more well-being at school, especially in school lessons.

From a theoretical point of view, Ryan and Deci (2000) find that the primary reason why people perform activities that are not typically interesting is because such activities are stimulated, modeled or valued by significant others to whom they feel (or want to feel) attached or related. Because relatedness is likely to facilitate internalization of the value of schoolwork, relatedness may facilitate students' engagement with school and have a positive influence on students' initiative for those school tasks that

initially are not intrinsically motivating. These findings support the emphasis on an inclusive school environment, which is central in the national curriculum in Norway (Danielsen, 2010). Wentzel (1997) found that perceived caring from teachers predicted motivational outcomes.

Moya et al. (2014) found a consistent positive association between teacher connectedness and emotional well-being regardless of demographic factors, country and perceptions of school performance. It is no coincidence that "relation competence" is emphasized in the teacher-students curriculum, often with reference to Deci and Ryan's self-determination theory. The theory about self-determination is central for us to be able to understand how the context or the environment stimulates good health and well-being for adolescents.

According to the self-determination theory, the foundation on which to make positive development and growth is that the individuals foundational needs for relatedness, competence and autonomy are met (Ryan and Deci, 2000). Affiliations are the need to experience feeling at home and to be capable of making and maintaining stable and strong interpersonal bonds. Competence is to experience challenges and mastery of tasks and activities. The need for autonomy revolves around the person's need for self-rule and influence through initiation, will control and recognition of his/her own behavior (Ryan and Deci, 2009). When satisfaction of these needs is threatened, the experience of well-being will diminish. Several studies among students in the age of 14 to 19 years of age support the self-determination theory, and the importance of development and growth through relatedness, competence and autonomy (Lagestad 2017a, b; Lagestad et al., 2015).

Even though humans have a natural tendency to orient themselves towards growth and development, the encouragement of active support from the surroundings is necessary. The social environment can either facilitate growth and development for the individual, or it can disturb and prevent prolific processes, and then instead bring with it negative experiences for the individual (Deci and Ryan, 2002). Our discussion will examine more closely something which may look like the school has succeeded in creating exactly a social environment with growth and development.

Aim of the study

Other Norwegian studies regarding student well-being have not looked at student's well-being during school hours or recess, but rather at well-being in each subject respectively (Bjerke et al., 2016; Lagestad, 2017a; Wabakken, 2010). There are also studies that are closely situated against well-being, or well-being, such as student's inner and exterior motivation. Furthermore, no studies have followed the same students during

adolescence with a longitudinal design. No longitudinal studies have followed the same adolescent development of well-being at school during lower secondary and high school. Neither do we have much knowledge of which factors (such as gender and overweight) that predicts adolescent's well-being at recesses at school and lessons in school. Available data include longitudinal data of students' gender, overweight, and well-being at recesses at school and lessons at school from 14 years old, to the age of 19 years old. Based on these data, this study will examine how the students level of well-being in recesses at school and lessons at school change during lower and upper secondary school. Furthermore, the study will examine whether gender and overweight predict well-being at recesses at school and lessons at school during the period.

METHODOLOGY

Design

Quantitative data from a research project included a group of randomly selected students ($N = 116$) and measurements of well-being in recesses at school and lessons at school during lower and upper secondary school. These variables were tested on six measure times during lower secondary school and high school.

Subjects

Six classes out of ten classes with 8th grade students from the two lower secondary school in a town in the middle of Norway were randomly selected to participate in the study. Of the 124 students in these 10 classes, 116 8th grade students agreed to participate (age 14 ± 0.5 years, weight 54.2 ± 10.9 kg, height 1.63 ± 0.08 m). The number of boys and girls was relatively equal in the sample (61 boys and 55 girls), as well as the number of "urban and rural students." The number of students who had valid test data during the data collection was: 105 at 8th grade, 103 at 9th grade, 106 at 10th grade, 79 first year at high school, 65 second year at high school, and 88 third (and last) year at high school. The reasons for the invalid data were dropout due to illness, injury, pregnancy, or that the student moved away from the town.

Only 41 students had valid data at all six measures in the period April to May each year from 2010 until 2015. During 8th grade, 9th grade and 10th grade the students had the same subjects, but at high school, the subjects differed. To get a necessary response rate over 50% (Johannessen et al., 2010), it was decided to include students who had valid measurements at three times, in 8th grade, 10th grade and at third year at high school. With such a strategy, the development in well-being was also examined with measures at the first year at lower secondary school (14 years old), at the end of lower secondary school/start of upper secondary school (16 years old), and at the end of secondary school (19 years old). Sixty eight students (33 boys and 35 girls) had valid data at these three times, a response rate of 59%.

However, to elucidate whether well-being at school varied in relation to the students' gender and overweight, the students with valid questionnaire data on each of the three measure times were selected to achieve a higher number of respondents ($N = 8^{\text{th}}$ grade: 105, 57 boys and 48 girls, 10^{th} grade: 103, 56 boys and 46 girls. Third year at high school: $N = 88$, 42 boys and 46 girls).

Table 1. Reported well-being in recesses at school among boys and girls in 8th grade, 10th grade and third year at high school (%).

Variable	Very poor	Poor	Good	Very good	N
Boys, 8th grade	-	2.9	28.6	68.6	33
Girls, 8th grade	-	3	30.3	66.7	35
Boys, 10th grade	-	-	37.1	62.9	33
Girls, 10th grade	-	-	39.4	60.6	35
Boys, third year high school	-	-	28.6	71.4	33
Girls, third year high school	-	-	30.3	69.7	35

The subjects were fully informed about the protocol before participating in this study. Approval to use the data and conduct the study was given by the Norwegian Social Science Data Services (NSD), and the Norwegian Ethical Regional Comity.

Procedures

Height, weight and questionnaire responses were tested on each subject at each year at the same time, but the data collection took place during a period of two months (April to May) in 8th grade, 9th grade, 10th grade, first year at high school, second year at high school, and third year of high school. All tests and measurements were performed each year in the same room, with the same test procedures, the same test equipment, and with the same test leader at all of the six test measures.

Height was measured with a measuring tape permanently fixed to the wall. The subjects did not wear shoes, and the height closest to 0.5 centimeter was registered. The weight was measured with a Seca digital weight with an accuracy of 0.1 kilo. Body mass index was calculated in relation to international standards (Cole et al., 2000). Cutoff for overweight was set at 22.62 for boys and 23.34 for girls at 8th grade, 23.90 for boys and 24.37 for girls at 10th grade, and 25 for all students in third year at high school, according to Cole et al. (2000).

The students ended the test protocol by answering a questionnaire that examined the degree of well-being in recesses at school and in lessons at school on a four point scale, by answering these following questions: "how would you rate your well-being in recesses at school?", and "how would you rate your well-being in lessons at school?" The reply options were very good, good, poor, and very poor. In addition, a question about gender was included. The questions were standardized, and used in other studies of adolescents in Norway (Aspvik et al., 2008). It may be argued that these two questions have high face validity (Johannessen et al., 2010).

Statistical and qualitative analysis

The assumption for a parametric test was not fulfilled because the dependent variable was not a interval or ratio scale, and a Friedman non-parametric test was used to examine if the students' level of well-being at recesses at school and lessons at school changed during the three measure times. If significant changes were found, the same tests were conducted on boys and girls separately.

A Wilcoxon non-parametric test was used to examine differences in well-being between recesses at school and school lessons across the three time points. The following variables were recorded

into a dummy variable to be suitable for logistic regression analyses: Well-being at recesses (not very good well-being/very good well-being), well-being at school lessons (not very good well-being/very good well-being) and overweight (not overweight/overweight).

A Spearman correlation test was used to identify bivariate associations between well-being and the independent variables as criteria for inclusion in logistic regression, and to identify multicollinearity between the independent variables. The independent variables (gender and overweight) that showed bivariate associations with well-being at the three measure times were included in the logistic regression analysis. Logistic regression was performed to calculate Odds Ratios (OR) with 95% Confidence Intervals (CI) for well-being at recesses and in school lessons as the outcome variables.

Finally, to examine whether there were differences between students with valid data and the drop out students, Chi square test was used to examine association in well-being at both recesses and school lessons, between the 68 with valid data on the 3 measure times, and the 37 that only had valid data at 8th grade. Statistical significance was set at $p \leq 0.05$. Statistical package for social sciences (SPSS) version 23 was used to perform the analyses. Statistical analysis was performed with SPSS statistical software version 24 (SPSS Inc., Chicago, IL, USA).

RESULTS

The analyses of the results presented in Table 1 showed no significant differences in well-being at recesses at school during the period ($\chi^2_2 = 1.2$, $p = 0.555$). An important question according to the development of well-being is whether the dropout is random. Chi square test showed no association in well-being in recesses at school at 8th grade, between the 68 included in the analysis, and the 37 that were measured in 8th grade, but dropped out ($p > 0.05$). In other words, the dropout is random.

The development of well-being at school lessons

The analyses of the results presented in Table 2 showed no significant differences in well-being in school lessons during the three measurement periods ($\chi^2_2 = 0.2$, $p = 0.886$). Analyses showed that well-being at school

Table 2. Reported well-being in school lessons among boys and girls in 8th grade, 10th grade and third year at high school (%).

Variable	Very poor	Poor	Good	Very good	N
Boys, 8th grade	-	2.0	60	37.1	33
Girls, 8th grade	-	3	63.6	33.3	35
Boys, 10th grade	-	5.7	57.1	37.1	33
Girls, 10th grade	-		54.5	45.5	35
Boys, third year high school	-	9.1	60	37.1	33
Girls, third year high school	-	2.9	48.5	42.4	35

Table 3. Baseline characteristics of the participants included in the Spearman correlations and the logistic regression analyses.

Variable	8th grade (n = 105)	10th grade (n = 103)	Third year high school (n = 88)
Well-being at recesses at school			
Not very good, %	39.5	36.8	27.6
Very good, %	61.5	63.2	72.4
Well-being at school lessons			
Not very good, %	33.3	37.7	42.1
Very good, %	66.7	62.3	57.9
Gender			
Girls, %	46.2	44.8	52.3
Boys, %	53.8	55.2	47.7
Overweight			
Not overweight, %	88.5	79.8	76.1
Overweight, %	11.5	20.2	23.9

lessons was significantly lower in school times than at recesses at 8th grade, 10th grade and third year at high school ($z = -4.64$, $p = 0.000$; $z = 5.11$, $p = 0.000$; $z = -4.84$, $p = 0.000$). Chi square test showed no association in well-being in school lessons at 8th grade, between the 68 included in the analysis, and the 37 that were measured in 8th grade, but dropped out ($p > 0.05$). In other words, the drop out seems to be random.

The importance of gender and overweight in relation to well-being in recesses and school lessons

Table 3 shows the baseline characteristics of the participants that are included in the Spearman correlations and the logistic regression analyses. Table 4 show that neither gender nor overweight showed bivariate associations with well-being in sport at 8th grade, 10th grade or third year at high school. Table 5 shows that overweight showed bivariate associations with well-being at 10th grade. However, the correlation is

small, and at a borderline p level (p level nearly at 0.05). While 42.9% of those categorized without overweight reported very good well-being in school lessons, only 19% of students with overweight reported very good well-being in school lessons. Neither gender or overweight showed bivariate associations with well-being in sport at 8th grade, or third year at high school, and there was no association between gender and well-being in 10th grade. The logistic regression analyses in Table 6 show that even if overweight showed (a low) bivariate association with well-being at 10th grade, overweight does not predict well-being at school lessons.

DISCUSSION

The results of our study show that the level of well-being in both recesses and school lessons is un-changed through middle school and high school, from the age of 14 until the age of 19. Furthermore, in relation to well-being at school, there is no difference between genders

Table 4. Spearman correlations between well-being at recesses at school (not very good/very good) and possible predictors of well-being at recesses at school.

Possible predictors of well-being in sport	Well-being 8th grade ^a (n = 105)	Well-being 10th grade ^b (n = 103)	Well-being third year high school ^c (n = 88)
Gender	-0.06	0.05	-0.00
Overweight	0.12	-0.07	0.05

^aCorrelated against the independent variables (predictors) at the same measure time in 8th grade; ^bCorrelated against the independent variables (predictors) at the same measure time in 10th grade; ^cCorrelated against the independent variables (predictors) at the same measure time third year at high school.

Table 5. Spearman correlations between well-being at school lessons (not very good/very good) and possible predictors of well-being at school lessons.

Possible predictors of well-being in sport	Well-being 8th grade ^a (n = 105)	Well-being 10th grade ^b (n = 103)	Well-being third year high school ^c (n = 88)
Gender	0.00	-0.07	-0.06
Overweight	0.01	-0.20*	-0.07

^aCorrelated against the independent variables (predictors) at the same measure time in 8th grade; ^bCorrelated against the independent variables (predictors) at the same measure time in 10th grade; ^cCorrelated against the independent variables (predictors) at the same measure time third year at high school; *Significant association on a $p < 0.05$ level.

Table 6. Factors associated with well-being in school lessons at 10th grade.

Variable	Very good well-being in sport at 8th grade		
Possible predictors of well-being ^a	OR	95% CI	P-values
Overweight	0.31	0.10-1.01	0.053

and students categorized with or without overweight at 14, 16 and 19 years of age respectively. This is in line with another study among the same students, which found no group differences in well-being in physical education between girls and boys, and between students categorized with or without overweight. One might argue that the school is organized in such a way that everyone thrives. It could be determined that motivation is closely related to the experience of sharing and meaning, as argued in the introduction. Motivated students who discover their own talents are stimulated and develop in a positive direction, which can also give positive manifestations in performance and endurance, creativity, vitality, self-esteem and in general increased life satisfaction (Ryan and Deci, 2000). This is supported by the findings of Anderson and Grahams (2016), based on a large mixed-methods study in Australia that sought the views of students, principals, teachers, and other staff about well-being at school. The findings revealed that students understood well-being in multifaceted ways, including having a say, being listened to, having rights, and being respected. Further, both students and staff

identified positive associations between having a say at school, being recognized (cared for, respected, and valued), and well-being.

National surveys that shows that young people who experience professional and social engagement, have ambitions and identify themselves with high school education, have an increased probability to complete high school. On the contrary, many Norwegian youths with low or lacking motivation decide to leave school or end their schooling without having completed all their subjects, and miss important ways of development, something that can have serious consequences for health and well-being later in life (Kunnskapsdepartementet, 2010; Markussen et al., 2008).

The findings in our study do in many ways confirm that the school has actually succeeded in creating exactly these fellowships of interest and value, which again results in well-being for both genders, regardless of physical form and body mass index. In terms of well-being, it might be argued that Ryan and Deci (2000) self-determination theory could be central in the extension of an interest and value fellowship, where communication

and quality of participation are of high importance. Motivation is promoted for the students when the activity and the environment satisfy the following three foundational psychological needs for the students: the need for autonomy, the need for competence and the need for affiliation. In this article, affiliation is defined as a possible explanation for an above average well-being score, both in recess and in the classroom (Ryan and Deci, 2000).

The teacher's role has been given a big responsibility for the well-being of students, and well-being in general, during a short amount of time (Spurkeland, 2011). This might be a very important contribution for the positive outcome, regarding well-being in the aforementioned studies, and in the study on which this article is based upon. Relations pedagogy has in other words become a significant component to the teacher profession, and the teacher's emotional intelligence (Spurkeland, 2011) has become an indicator for the ability to build relations. The importance of relationship when it comes to well-being, is supported by a study called "Facilitating student well-being: relationships do matter" (Graham et al., 2016). The study involved focus groups with 606 primary and secondary students and individual interviews with 89 teachers and principals, and the findings affirm the critical role that relationships play in promoting well-being in the context of schools. The relationships described as important, were both between teacher and student and between students.

We have already argued that the results from our study might indicate a good relationship between teacher and student. Our study shows no difference between genders, and between students with or without overweight. One might argue that the teacher profession during the past decades has had an increased focus on relation building, which again leads to more self-esteem and increased life satisfaction among students (Ryan and Deci, 2000). The school's role as an arena of socializing (Danielsen, 2010), by having a good relationship with the teacher, affects the students well-being. "When the students experience pedagogical care combined with self- and codetermination in the classroom, it means a lot for the motivation of students for schoolwork and positive development", according to Danielsen (2010).

A study in South Australia about students' social/emotional adjustment and academic achievement and motivation obtained data for 888 students across years 5 to 9 from 58 classes in 21 schools (Murray-Harvey, 2010). They were asked about their perceptions of relationships with family, peers and teachers as sources of stress or support at school. The results confirmed the strength of the connection between the student's social/emotional and academic experience of school, and highlighted that both academic and social/emotional outcomes are unambiguously influenced by the quality of the relationships between teachers and students. This

exert the strongest influence on well-being and achievement outcomes for students (Murray-Harvey, 2010) compared with relationships within family and peers.

Another benefit of experiencing affiliation, competence and autonomy is that the student achieves a self-regulation (Danielsen, 2010), which is a central mechanism for meaningful behavior. An important component in the students' self-regulating process is well-being at the school and an experience of feeling included in the learning environment. Perceived competence has also shown itself to have a coherence with well-being (Danielsen et al., 2009). One might assume that both learning and well-being are mutually beneficial for the student's self-regulating initiative and involvement in learning processes (Danielsen, 2012).

Conclusion

The findings show that the student in general reports good and very good well-being at school during middle school and high school, from the age of 14 until the age of 19. Furthermore, the level of well-being in both recesses and school lessons is at the same level through middle school and high school. Finally, the results show that there is no difference between level of well-being, and boys and girls, and students categorized with or without overweight at 14, 16 and 19 years of age respectively. We argue that this study indicates that the Norwegian school is organized in such a way that everyone thrives. There is a lack of longitudinal studies and a lack of multivariate analyses on this topic, and the present study contributes with new knowledge. Further studies should include more subjects and possible predictors of well-being in both recesses and school lessons.

Limitations of the study

The study discusses student's outlook towards recesses and school lessons, and some critical analyses are necessary with such a design. Such a design does not necessarily measure the quality of school lessons and learning, but the subjective experiences of the students in relation to their well-being. However, such experiences are important in relation to create learning at school. Another limitation of this study is that well-being in recesses and school lessons are measured with only two questions rather than several. Asking more questions would promote a wider measurement of well-being as a phenomenon. However, it is argued that answering the two general questions; "How would you rate your well-being in recesses and school lessons respectively", is the major and two most important questions that seek to find the adolescents' general attitude towards recesses and

school lessons. Nonetheless, asking more questions in relation to well-being would have been preferable in order to promote a deeper understanding of the phenomenon well-being in lower secondary school and high school. Almost none of the subjects select 'poor' or 'very poor', and somehow this affects the reliability and validity of the question. An important question regarding the development of well-being is whether the dropout rate of students from the present study was random. Statistical analyses show no association in well-being in recesses and school lessons, between the 68 subjects included in the analysis in Tables 1 and 2, and the 37 students who dropped out. In other words, the dropout rate seems to be random and therefore is not problematic.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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